Preparing for the Gaia extragalactic reference frame:
optical–radio positional offsets for large samples of AGN

Gábor Orosz (Kagoshima Univ., JP)
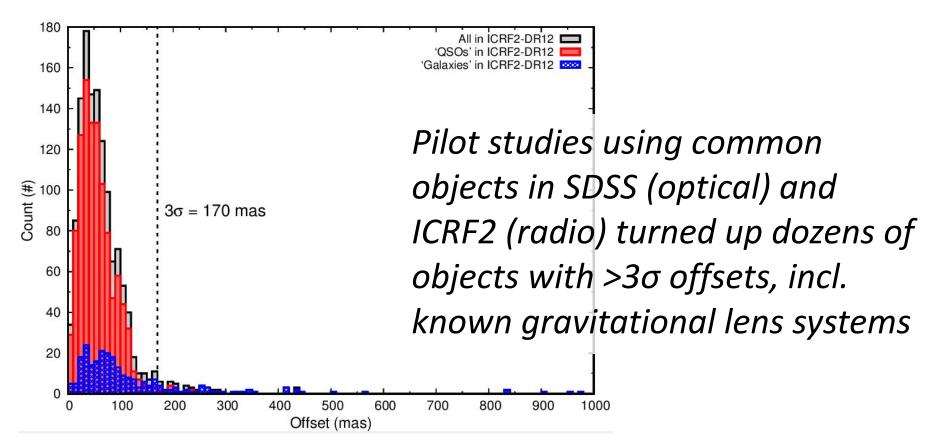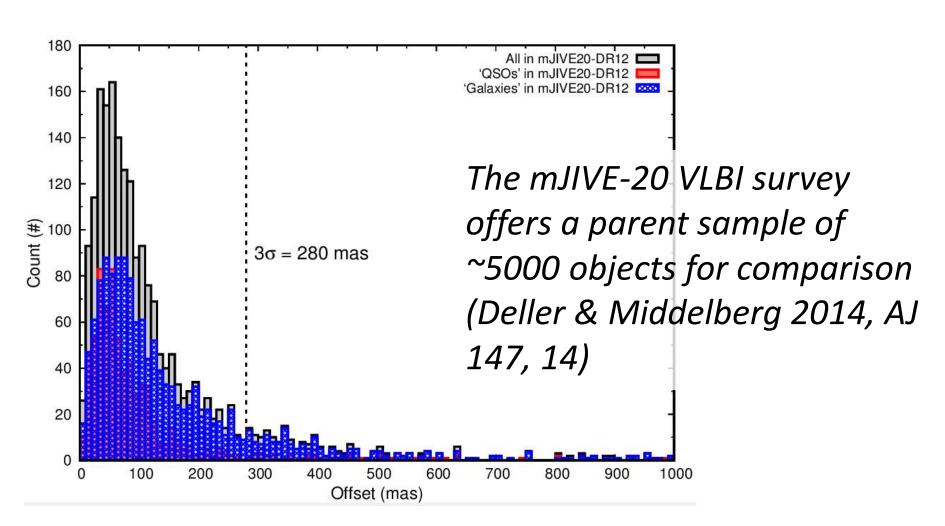**Sándor Frey (FÖMI, HU)**
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With *Gaia* it will soon be possible to **compare accurate optical AGN positions** with those obtained with **VLBI** in the radio for a large sample

- *to find the best way of **linking the reference frames***
- *to find astrophysically **interesting 'offset' AGN***

Pilot studies using common objects in SDSS (optical) and ICRF2 (radio) turned up dozens of objects with >3σ offsets, incl. known gravitational lens systems
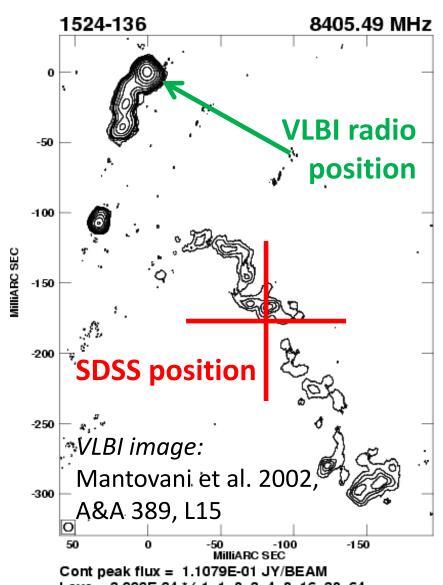
The 'offset' objects could be e.g. dual or recoiling AGN, interacting galaxies, gravitational lenses *(with very low probability of false identification at these separations)*

The mJIVE-20 VLBI survey offers a parent sample of ~5000 objects for comparison (Deller & Middelberg 2014, AJ 147, 14)

The much-improved *Gaia* astrometry will **open a new window** on peculiar AGN by providing samples of **optical–radio positional outliers** for follow-up studies

Example for 'offset' quasar

VLBI radio position

SDSS position

VLBI image: Mantovani et al. 2002, A&A 389, L15